


Well-being through work



Finnish Institute of
Occupational Health



L/SH drivers' work outside the cab: From ergonomics and accident statistics analyses to participatory development and future scenarios

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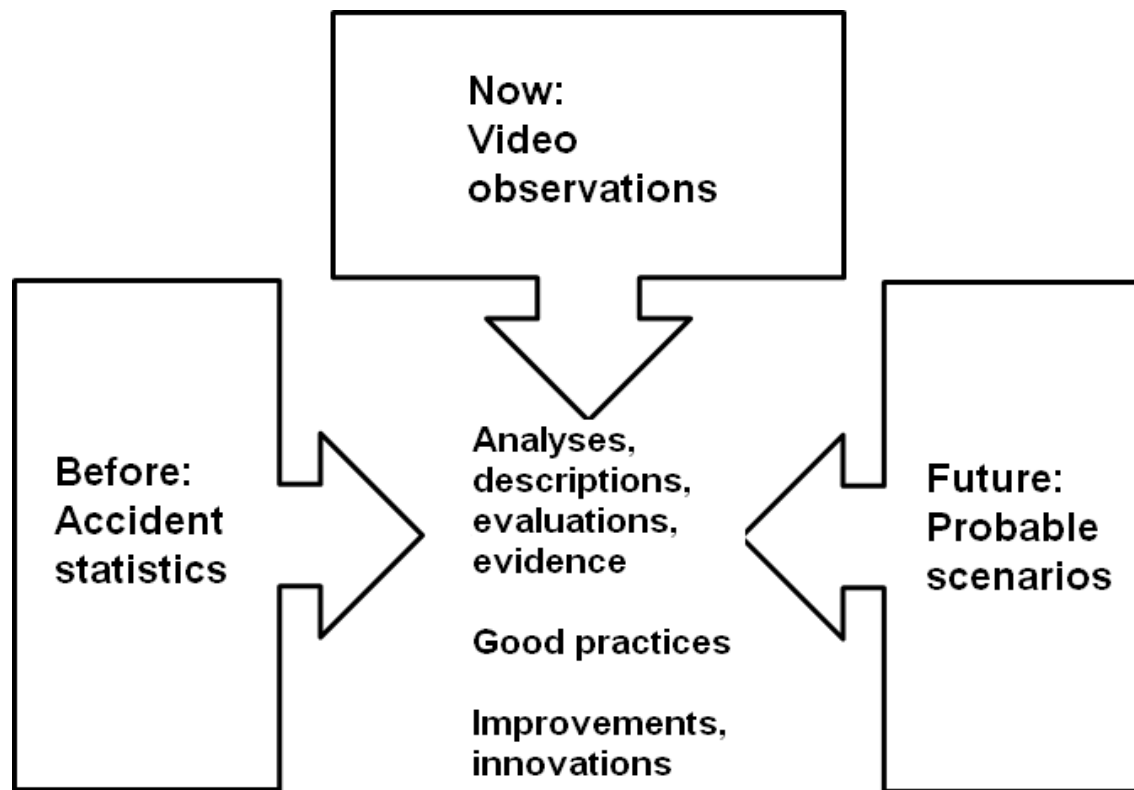
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Background and earlier literature

- Local and short haul (L/SH) truck drivers work in various kinds of work environments as well as that of the truck.
- tasks such as loading and unloading cargo are performed frequently during the work shift.
- Appr. half (or even more) of the work shift is about this work outside the cab
- A majority of the accidents at work (in Finland and in EU level occur in such work environments
- Additionally work-related musculoskeletal disorders are strongly associated to work outside the cab.
- Usually drivers work alone in these work environments, and their safety is not monitored. In cases of accidents, quick help is not always easily available
- The law requires that the employer must be aware of the risks that the employees face not depending where and when the work is made.
- Both observational and archival studies are needed in order to understand the full complexity of a natural environment and also when the possibilities for controlled experiments are limited

Study design

**HAITEK - “UNDISTURBED” DISTRIBUTION OF GOODS -
Manual materials handling and other activities by drivers out-
of-the-cab of transportation trucks**



Results

Before: national accident statistics

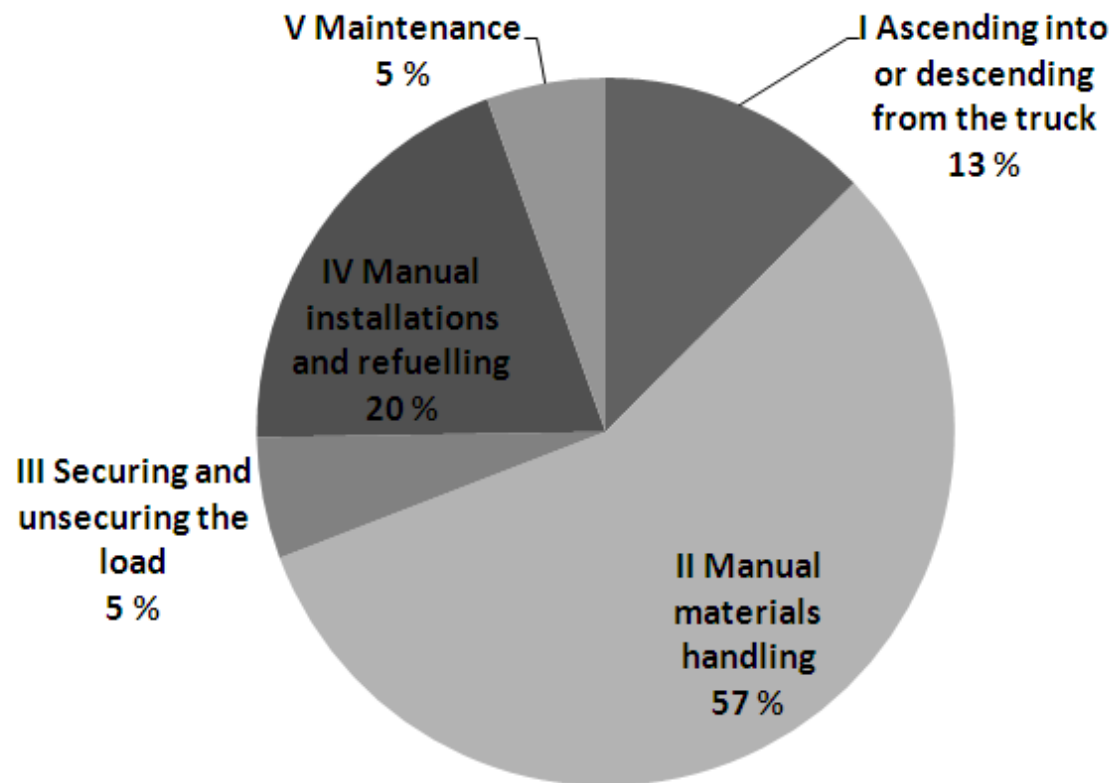


Figure 2. Accidents (n=2880) in the Finnish road transport sector in 2006 classified by the physical specific activity they were related to.

Results

Now: video observations

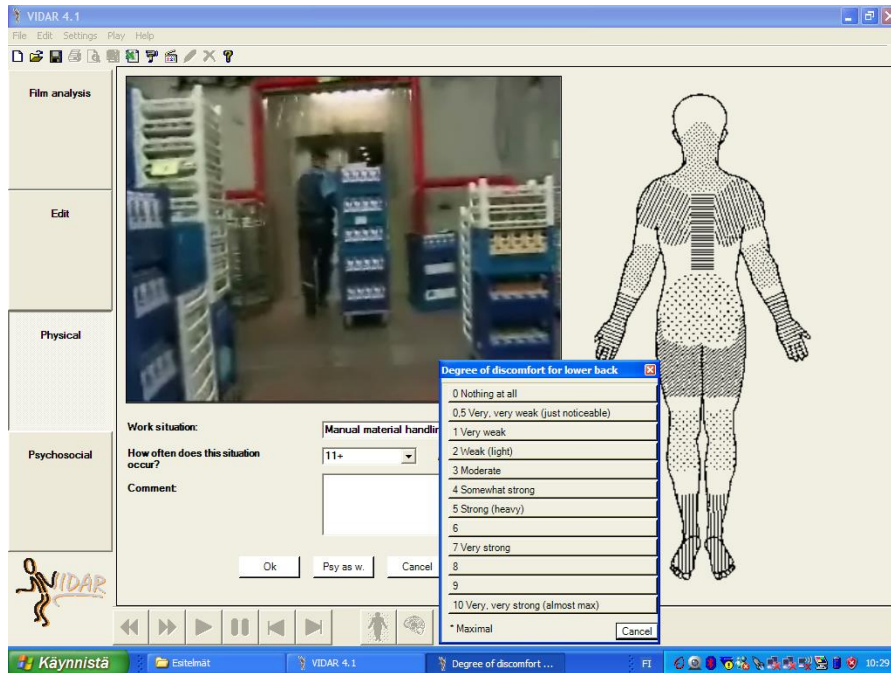


VIDAR – computer-assisted participative analysis tool for defining possible risks and discomforts

- VIDAR is a Swedish video and computer-assisted analysis method that has been translated into Finnish. (Version 4.1)
- VIDAR is participative method for evaluating physical and psychosocial strain factors of work from video.
- Developed by Arbetslivsinstitutet, Chalmers University of Technology and Lund University in 1990s'
- More about VIDAR www.vidarweb.se
- There are several articles and conference papers about VIDAR
 - For example NES2006, Väyrynen & Saaranen, NES 2003 Forsman et al. NES2006 Forsman et al.

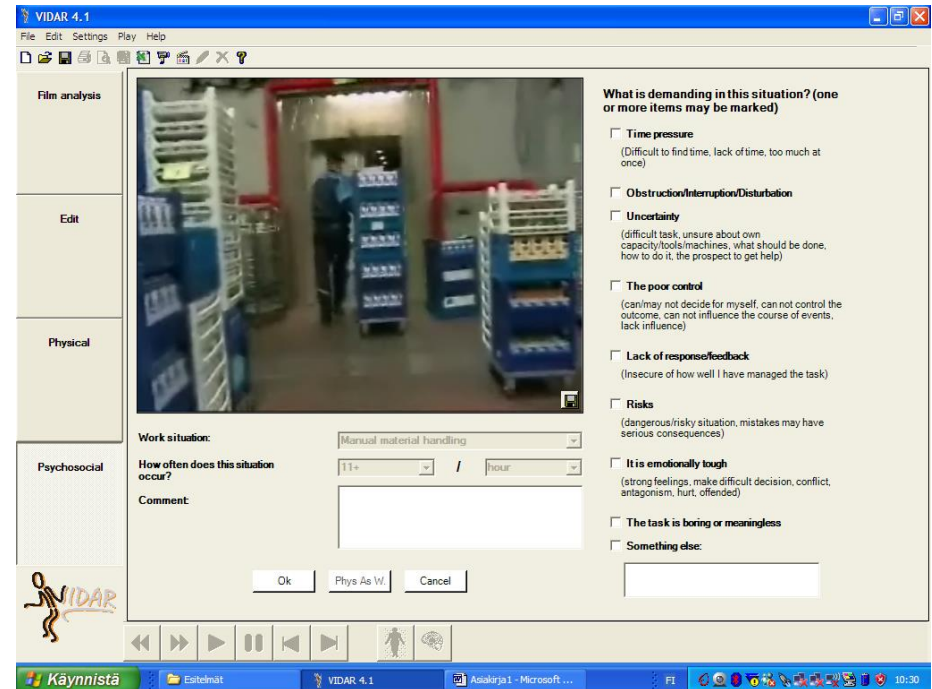
Results

Now: video observations



VIDAR: When identifying physically demanding situation

7 All together over 300 different identifications were made by the drivers and other stakeholders



VIDAR: When identifying psychosocially demanding situation

Results

Now: video observations



Results from VIDAR analyses: Some examples of identified discomforts

Results

Now: video observations



Results from VIDAR analyses: Some examples of identified discomforts

Results (not to be published on the website, can be found from my PhD thesis on Univ. Oulu web page)

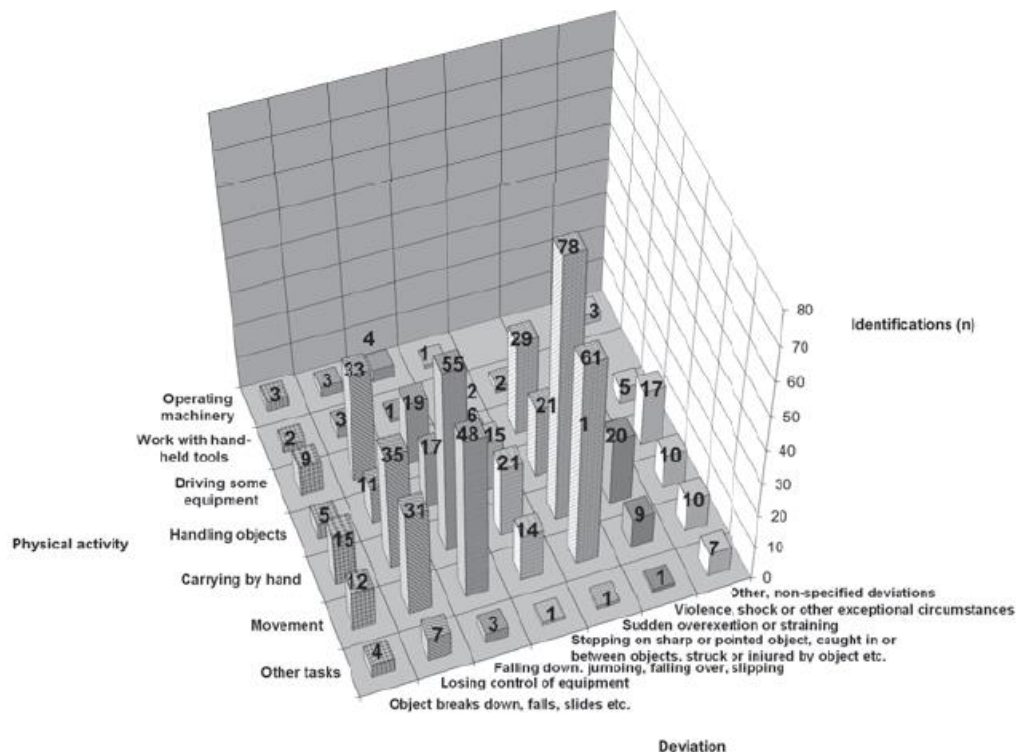


Fig. 3. Physical activities and deviations in identified physically and psychosocially demanding work situations and hazard risks (n=202). Each identification can include one or more physical activities and deviations. Modified from Article II with permission of Taylor & Francis.



Results (not to be published on the website, can be found from my PhD thesis on Univ. Oulu web page)

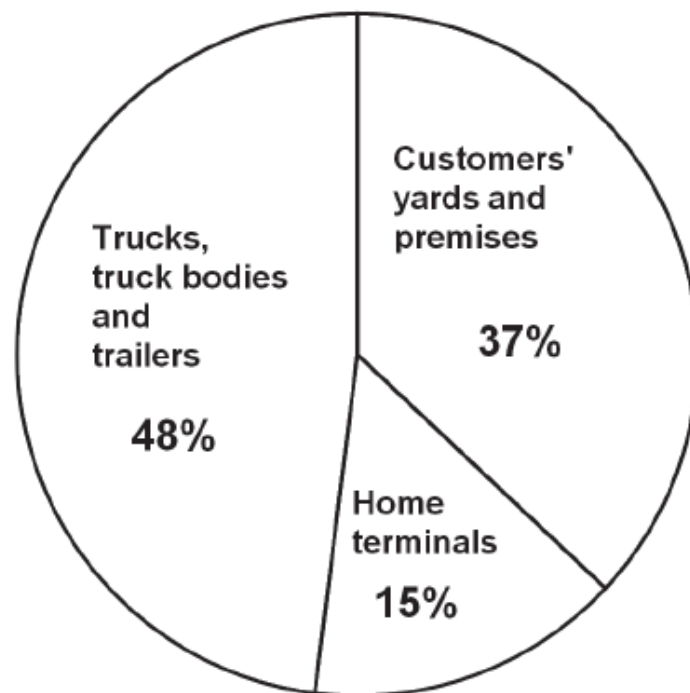
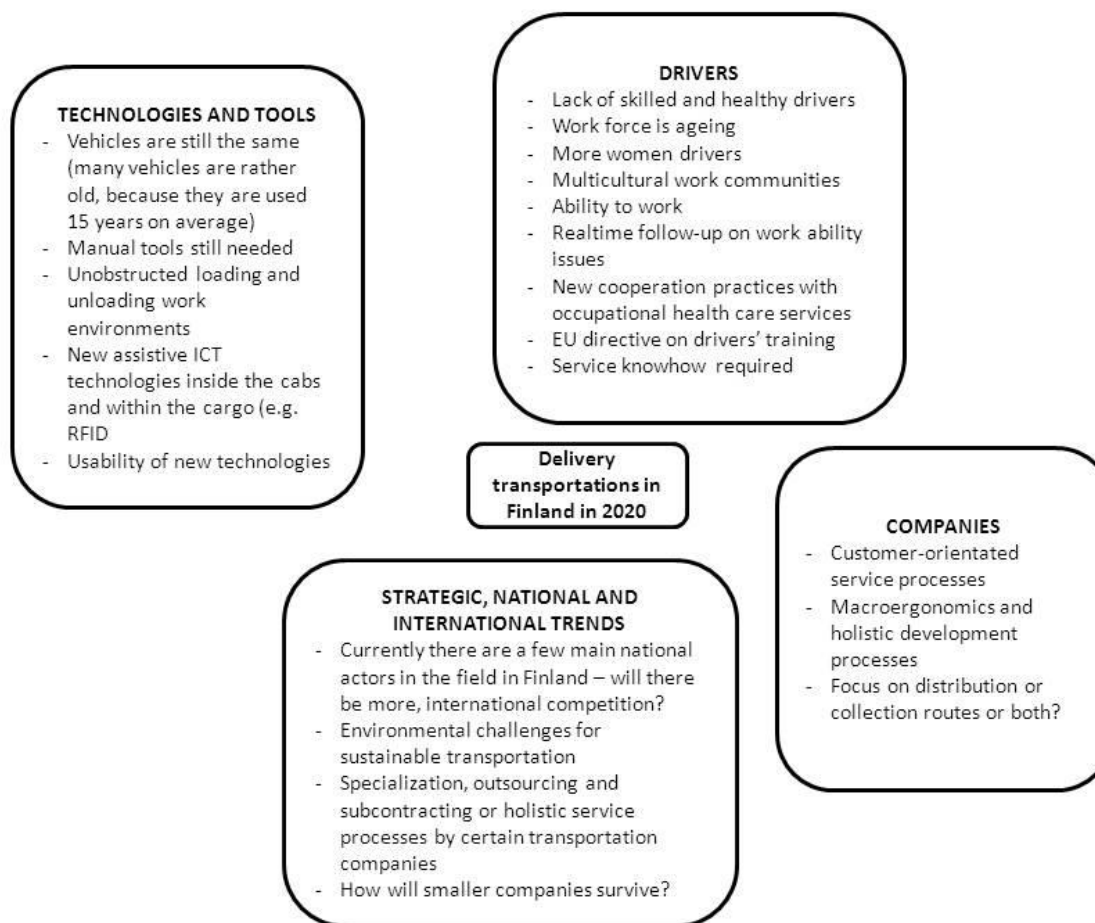


Fig. 4. Identifications of physically and psychosocially demanding work situations and hazard risks (n=262) divided into work environments where they were performed. Modified from Article IV with permission of Inderscience Publishers.

Results

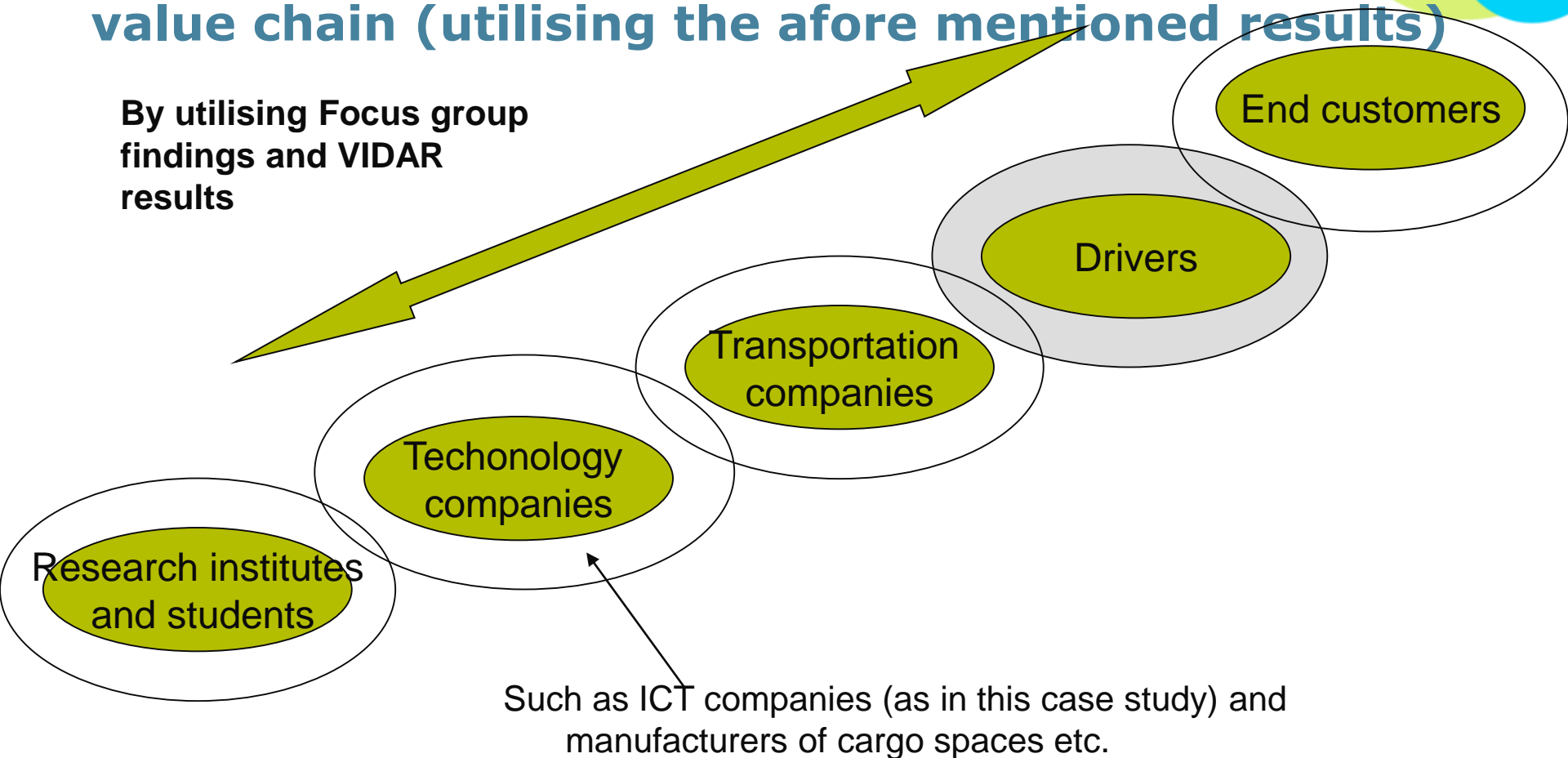
Scenarios: future



Results

Participative design processes within value chain (utilising the afore mentioned results)

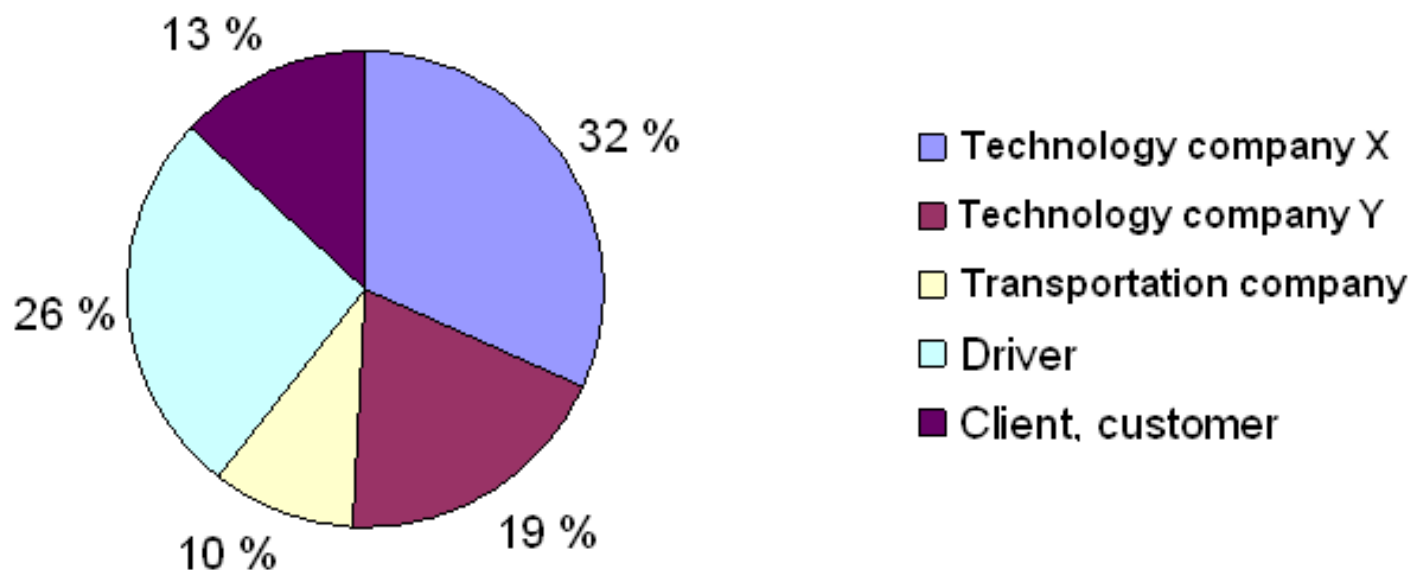
By utilising Focus group findings and VIDAR results



Results

Participative design processes within value chain (utilising the afore mentioned results)

Who could solve these problems? - problem owners



Results



Results from the participative design processes

A new ICT application to an existing hand terminal.

KePa contains its' own section for drivers to assess customers' environments and activities. The tool also contains a section for customers to assess drivers and transportation

company's work.



Results



Results from the participative design processes

A new ICT application to an existing hand terminal. Contents of the application below

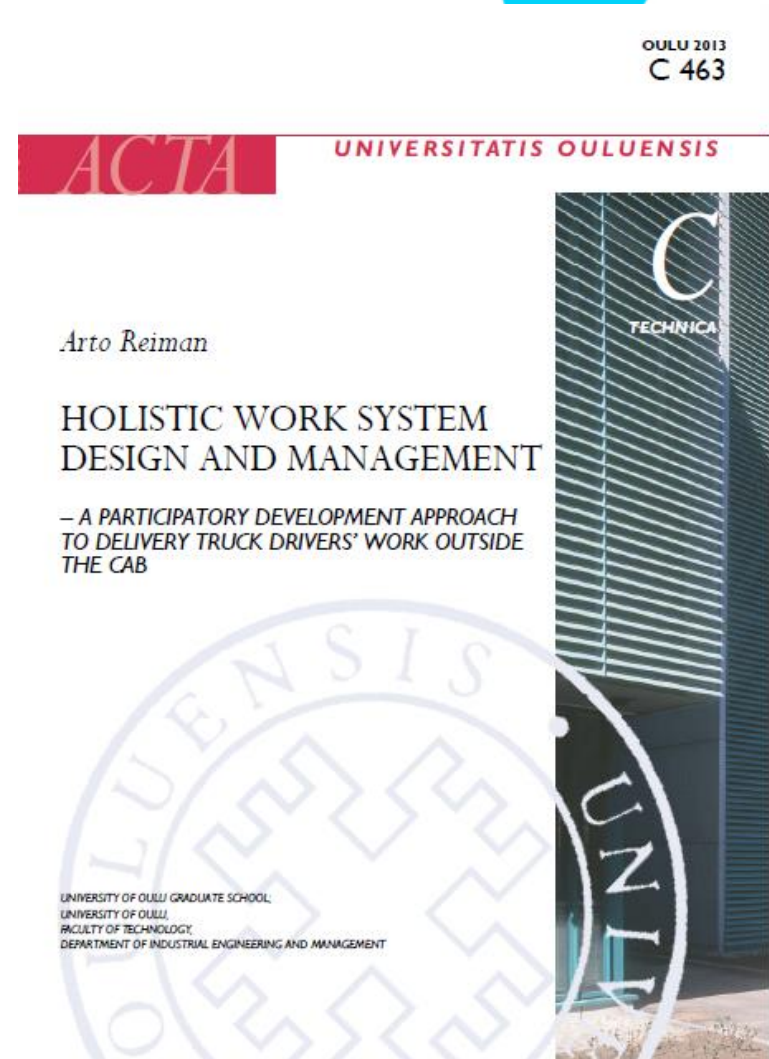
| Section A (For the driver to assess customers) | Section B (for the customer to assess drivers) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none">1. Approaching the customer premises within vehicle<ul style="list-style-type: none">- How are the roads maintained and signals placed?2. Outdoor areas and buildings<ul style="list-style-type: none">- How are the roads maintained for humans?- Is there enough space for the vehicle and unloading activities?3. Unloading and loading circumstances<ul style="list-style-type: none">- How are the loading and unloading platforms maintained and cleaned?- Are there enough signals?4. Fluency of communication procedures<ul style="list-style-type: none">- Does the driver get help easily if needed?5. Physical load in unloading and loading activities<ul style="list-style-type: none">- Does the driver need to work in difficult (and repeating) working postures- Are motorised devices available if needed?6. Psychosocial load in unloading and loading activities<ul style="list-style-type: none">- Is there enough information for the driver to perform the work?- Are there any exterior risk factors? | <ol style="list-style-type: none">1. Transportation company's performance<ul style="list-style-type: none">- How are the customer relationships maintained?2. Delivery and customer satisfaction<ul style="list-style-type: none">- Are the right, non-damaged products are delivered at the right time?3. The driver's performance in customer's premises<ul style="list-style-type: none">- How is the behaviour of the driver?- How are the drivers working manners?- Is the driver working safely?- Does the driver take into account environmental issues?4. Fluency of communication procedures<ul style="list-style-type: none">- Is the driver willing and able to communicate and give more information if needed? |

Conclusions

Holistic management processes require broad participation from different stakeholders.

- Employees to work safely, employers to provide safe work equipment, work environment etc., customers to cooperate with transport companies, designers to design safe equipment and so on...
- Video analyses proved to be an efficient tool to provide objective and illustrative information for different stakeholders use

A more profound discussion can be found on the PhD thesis (pdf can be downloaded from University of Oulu's webpage





Investing in well-being at work is productive

Thank you!

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